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EXAMINER

BEVERIDGE, RACHEL E

ART UNIT PAPER NUMBER

1725

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,725

Applicant(s)

WANG ET AL.

Examiner

Rachel E. Beveridge

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election of Group I, claims 1-16, in the reply filed on December 16, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "126" has been used to designate both the video screen (126) and the optics module (124). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Figure 2(124) and Figure 4(110). Corrected drawing sheets in

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compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The applicant's drawing amendments (p. 8) stated attached sheets of drawings to include changes to figures 2 and 4 of the original application. However, the replacement sheets, 2 of 3 and 3 of 3, were not received.

Claim Objections

Claim 3 is objected to because of the following informalities: the claim does not clearly state what is being navigated and simply introduces a step of navigating not mentioned in prior claims. It is unclear to the examiner what is being navigated and was therefore interpreted for examination purposes to be the navigation of the said flexible articulate tubular device of claim 1 (line 3) with at least one bend within the tubular structure being welded. Appropriate correction is required.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8, and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Branch et al. (US 3,219,789).

With respect to claim 1, Branch discloses his invention relating to welding with particular regard to the formation of the weld root in an arc welding process (col. 1, lines 9-11). Branch discloses a vessel (10) of circular cross-section with opposing cylindrical segments (11,12), which are identically formed at their adjoining ends to define a circular joint (13) (col. 1, lines 49-52). See figure 1. Branch teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figure 1. The shielding gas follows a path beginning at the inlet of the support rod (25) with a gas filled passage (33), and terminates at the outlet of the cup-shaped head (46) (col. 2, lines 62-70). See figures 1 and 3. Furthermore, Branch teaches that the parts are arranged so that "gas under pressure is permitted to flow from passage (33) through port (42) to chamber (41) and then by communicating connections through flexible tube (44) to head (46) where it is free to discharge as a directed stream through

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porous cover (47) directly upon the inner surface of joint (13)” (col. 3, lines 22-28). Branch discloses progressively forming the weld around the vessel (10) (col. 3, line 43).

Regarding claim 2, Branch teaches that the parts are arranged so that “gas under pressure is permitted to flow from passage (33) through port (42) to chamber (41) and then by communicating connections through flexible tube (44) to head (46) where it is free to discharge as a directed stream through porous cover (47) directly upon the inner surface of joint (13)” (col. 3, lines 22-28). Branch also teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figure 1. Furthermore, Branch discloses progressively forming the weld around the vessel (10) (col. 3, line 43).

With regard to claim 3, It is unclear to the examiner what is being navigated and was therefore interpreted for examination purposes to be the navigation of the said flexible articulate tubular device of claim 1 (line 3) with at least one bend within the tubular structure being welded. Branch shows at least one bend in flexible tube (44) in figure 1, and states that the shielding gas follows a path beginning at the inlet of the support rod (25) with a gas filled passage (33), and terminates at the outlet of the cup-shaped head (46) (col. 2, lines 62-70) which is directed toward the progressive formation of the weld (col. 3, line 43) directly below the weld area at the highest portion of the joint (13) (col. 3, lines 35-38).

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With respect to claim 4, Branch teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figure 1.

With respect to claim 5, Branch teaches that the parts are arranged so that "gas under pressure is permitted to flow from passage (33) through port (42) to chamber (41) and then by communicating connections through flexible tube (44) to head (46) where it is free to discharge as a directed stream through porous cover (47) directly upon the inner surface of joint (13)" (col. 3, lines 22-28).

Regarding claim 6, Branch discloses rotatably and slidably mounting a body (37) onto a support rod (25) within a vessel (10), with a portion of the body transverse to the plane of the joint (13) (col. 2, lines 55-58). Branch discloses holding the body (37) in a selected position so that the shielding gas follows a path beginning at the inlet of the support rod (25) with a gas filled passage (33), and terminates at the outlet of the cup-shaped head (46) (col. 2, lines 58-70).

With regard to claim 8, Branch teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figure 1. The shielding gas follows a path beginning at the inlet of the support rod (25) with a gas filled passage (33), and terminates at the outlet of the cup-shaped head (46) (col. 2, lines 62-70). See figures 1 and 3. Furthermore, Branch teaches that

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the parts are arranged so that "gas under pressure is permitted to flow from passage (33) through port (42) to chamber (41) and then by communicating connections through flexible tube (44) to head (46) where it is free to discharge as a directed stream through porous cover (47) directly upon the inner surface of joint (13)" (col. 3, lines 22-28). Branch discloses progressively forming the weld around the vessel (10) (col. 3, line 43).

Regarding claim 11, Branch discloses a vessel (10) of circular cross-section with opposing cylindrical segments (11,12), which are identically formed at their adjoining ends to define a circular joint (13) (col. 1, lines 49-52). See figure 1.

With respect to claim 12, Branch discloses a vessel (10) of circular cross-section with opposing cylindrical segments (11,12), which are identically formed at their adjoining ends to define a circular joint (13) (col. 1, lines 49-52). Branch teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figure 1.

With regard to claim 13, Branch shows an upperside and underside of the vessel (10) assembly in figure 1. The upperside being the outside of the vessel (10), and the underside being the inside of the vessel (10). Branch discloses his invention relating to welding with particular regard to the formation of the weld root in an arc welding process (col. 1, lines 9-11). Branch discloses a vessel (10) of circular cross-section with opposing cylindrical segments (11,12), which are

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identically formed at their adjoining ends to define a circular joint (13) (col. 1, lines 49-52). See figure 1. Branch teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figure 1. The shielding gas follows a path beginning at the inlet of the support rod (25) with a gas filled passage (33), and terminates at the outlet of the cup-shaped head (46) (col. 2, lines 62-70). See figures 1 and 3. Furthermore, Branch teaches that the parts are arranged so that "gas under pressure is permitted to flow from passage (33) through port (42) to chamber (41) and then by communicating connections through flexible tube (44) to head (46) where it is free to discharge as a directed stream through porous cover (47) directly upon the inner surface of joint (13)" (col. 3, lines 22-28). Branch discloses progressively forming the weld around the vessel (10) (col. 3, line 43).

With respect to claim 14, Branch discloses a vessel (10) of circular cross-section with opposing cylindrical segments (11,12), which are identically formed at their adjoining ends to define a circular joint (13) (col. 1, lines 49-52). Branch teaches arranging the welding apparatus with the welding tool (15) closely overlying the supported vessel (10) and the shielding head (46) directly below the weld area at the highest portion of the joint (13) and is opposite of the welding tool (15) (col. 3, lines 33-38). See figures 1 and 3.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Branch et al. (US 3,219,789) as applied to claim 6 above, and further in view of Corby, Jr. et al. (US 4,532,405).

Regarding claim 7, Branch does not disclose visual signals from the terminus of the tubular device used for directing shielding gas at the underside of the weld site. However, Corby illustrates optical cables for transporting visual signals from the terminus of a welding device in figure 1. Corby also discloses that these cables are "flexible coherent fiber optic bundles" (Abstract, lines 3-4). Furthermore, Corby states that an image of the weld puddle is used as feedback information to change the position of the optical systems (Abstract, lines 8-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the bonding method of Branch with the addition of the optical signals of Corby in order to optimize the gas metal arc welding device by detecting "weld puddle characteristics and seam to puddle deviation" (Corby, Jr. et al., column 1, lines 30-37).

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Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Branch et al. (US 3,219,789) as applied to claim 8 above, and further in view of Berg et al. (US 6,888,972 B2).

With respect to claims 9-10, Branch does not disclose temperature sensors from the terminus of the tubular device used for directing shielding gas at the underside of the weld site. However, Berg discloses TIG welding of cylindrical structures with fibers present (Column 19, lines 60-62). Berg states that precautions should be taken to ensure that the heat generated during the welding process does not damage the fibers (Column 20, lines 7-11). Berg also discloses TIG welding that is "confined between the weld and the base metal at the point of fusion so that a narrow heat affected zone is produced" (Column 20, lines 13-16). Furthermore, Berg discloses the temperature sensors for welding directed to "a multiple component sensor mechanism capable of being pre-assembled and used in numerous applications and environments" (Column 22, lines 39-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the welding method of Branch by adding the temperature measurements of Berg in order to ensure that the assembly process does not sink too much heat leading to a poorer weld joint or too little heat damaging the optical fibers (Berg et al., column 19, lines 62-67).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Branch et al. (US 3,219,789) as applied to claim 14 above, and further in view of Corby, Jr. et al (US 4,532,405).

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Regarding claim 15, Branch does not disclose visual signals from the terminus of the tubular device used for directing shielding gas at the underside of the weld site. However, Corby illustrates optical cables for transporting visual signals from the terminus of a welding device in figure 1. Corby also discloses that these cables are "flexible coherent fiber optic bundles" (Abstract, lines 3-4). Furthermore, Corby states that an image of the weld puddle is used as feedback information to change the position of the optical systems (Abstract, lines 8-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the bonding method of Branch with the addition of the optical signals of Corby in order to optimize the gas metal arc welding device by detecting "weld puddle characteristics and seam to puddle deviation" (Corby, Jr. et al., column 1, lines 30-37).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Branch et al. (US 3,219,789) as applied to claim 14 above, and further in view of Berg et al. (US 6,888,972 B2).

With regard to claim 16, Branch does not disclose temperature sensors from the terminus of the tubular device used for directing shielding gas at the underside of the weld site. However, Berg discloses TIG welding of cylindrical structures with fibers present (Column 19, lines 60-62). Berg states that precautions should be taken to ensure that the heat generated during the welding process does not damage the fibers (Column 20, lines 7-11). Berg also discloses TIG welding that is "confined between the weld and the base metal at

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the point of fusion so that a narrow heat affected zone is produced" (Column 20, lines 13-16). Furthermore, Berg discloses the temperature sensors for welding directed to "a multiple component sensor mechanism capable of being pre-assembled and used in numerous applications and environments" (Column 22, lines 39-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the welding method of Branch with the temperature feedback positioning of Berg in order to ensure that the assembly process does not sink too much heat leading to a poorer weld joint or too little heat damaging the optical fibers (Berg et al., column 19, lines 62-67).

Response to Arguments

Applicant's arguments, see page 9, lines 23-27, filed December 16, 2005, with respect to the rejection of claim 13 under 35 U.S.C. 112, second paragraph, have been fully considered and are persuasive. The rejection of claim 13 has been withdrawn.

Applicant's arguments, see page 11, lines 1-9, filed December 16, 2005, with respect to the rejection(s) of claim(s) 1-6 and 11-14 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Branch et al. (US 3,219,789).

Applicant's arguments, see page 11, lines 10-20, filed December 16, 2005, with respect to the rejection(s) of claim(s) 7 and 15 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has

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been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Branch et al. (US 3,219,789) and Corby, Jr. et al (US 4,532,405).

Applicant's arguments, see page 11, lines 10-20, filed December 16, 2005, with respect to the rejection(s) of claim(s) 8 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Branch et al. (US 3,219,789).

Applicant's arguments, see page 11, lines 21-30, filed December 16, 2005, with respect to the rejection(s) of claim(s) 9-10 and 16 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Branch et al. (US 3,219,789) and Berg et al. (US 6,888,972 B2).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory

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action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rachel E. Beveridge whose telephone number is 571-272-5169. The examiner can normally be reached on Monday through Friday, 9 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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PRIMARY EXAMINER